

USSR

UDC 621.372

BATALOV, B. V., KAZENKOV, G. G., KOTKO, A. P.; and RUDENKO, A. A.

"Algorithm for Statistical Analysis of Electronic Circuits"

Sb. nauch. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn.  
(Collection of Scientific Works on Problems in Miniature Electron-  
ics, Moscow Institute of Electronic Engineering) No 9 (Fiz.-mat.  
seriya), pp 61-67, 1972 (from RZh--Radiotekhnika, No 10, 1972,  
Abstract No 10A113)

Translation: An algorithm for statistical analysis of electronic  
circuits in the algorithm language ALGOL-60, using the TA-1M  
translator for the M-20 digital computer, is proposed.

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KAZENNOV, B.A.

JPKS 69068  
6-73

XIII-11. GROWTH OF SINGLE CRYSTALS OF  $A_2B_3$  COMPOUND AND CERTAIN OTHER ONES FROM THE VAPOR PHASE AND A MELT

(Article by B. A. Kazennov, Leningrad; Novosibirsk, III Sibirskiy na Protezenii  
Kontsa i Siniere Poluprovodnikov Khimicheskoy i Pionov, Russian, 12-17 June 1972,  
p. 133)

1. Single crystals of  $CdS$ ,  $CdSe$ ,  $GdI$  and others of the  $A_2B_3$  group and also  $PbS$ ,  $As_2S_3$ ,  $C_6H_4(CN)_2$ ,  $C_6H_4$  (anthracene) and other (freely growing polycrystalline forms were grown -- prisms, needles, plates, dendrites and single crystals of forced shapes -- cylindrical-conical).
2. A survey is made of techniques for growth from vapor and a melt used in small laboratory practices. Some arguments are stated regarding the principles of selecting the methods of growing certain single crystals.
3. Some practical recommendations are made with respect to growth of crystals from the vapor phase.
4. It appears possible that the crystallization from the vapor in certain cases takes place with respect to the vapor-molten state scheme, and in other schemes, vapor-liquid-solid state.
5. Arguments are stated regarding the factors affecting the growth mechanism of the crystals and determining the vapor crystallization path.
6. Some arguments are stated regarding the processes of growth of crystals from a melt as a function of the growing technique. Some practical recommendations are made with respect to growing crystals from a melt.

USSR

USHAKOV, V. B., PETROV, G. M., KAZENNOV, G. G.

"Prospects for Development of Third Generation Analog Computer Equipment"

Analogovaya i Analogo-Tsifr. Vychisl. Tekhn. [Analog and Analog-Digital Computer Equipment -- Collection of Works], No 5, Moscow, Sov. Radio Press, 1973, pp 3-19 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V640, by the authors).

Translation: A study is made of the characteristic features of third generation analog computers, related to changes in the technological base and the introduction of linear integrated circuits, as well as the use of a new principle of construction of these structural plans of systems, machines and computer units. The most important problems involved in the development of the software for future machines are indicated. 19 biblio. refs.

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USSR

KAZENNOV, G. G.

UDC 621.396.6-181.48

"An Extremum Problem in the Design of Semiconductor Integrated Circuits"

Elektron. prom-st'. Nauch.-tekhn sb. (Electronics Industry. Collected Scientific-Technical Works), 1972, No 2, pp 31-33 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 V196)

Translation: It is shown that labor consumption involved in the design of semiconductor microcircuits is determined on the basis of labor consumption involved in the solution of extremum and statistics problems (i.e. solving the problem of optimizing physical structure and geometric parameters) and in conducting a statistical analysis of the active element and the electric and topologic circuits. The optimization problem is formulated as a nonlinear programming problem. Optimization of the parameters of the following elements is studied: transmission, input and output characteristics of microcircuits, and element arrangement. Original article: seven bibliographic entries. N.S.

KAZENNOV, G.G.

Microelectronics

MICROELECTRONICS

JPRS 57333  
25 October 1972

Excerpt from Russian-language book edited by F. V. Lukin;  
Mikroelektronika, No 5, 1972, Sovetskoye Radio Publishing House,  
Moscow, UDC 621.382.621.396.6-181.5.

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[I - USSR - 7]

the dimensions of the active components, the influence of the dimensions being more significant as the required power of the circuit is less. The authors study the influence of the capacitance of the emitter junction of a microcircuit transistor on the speed of response of the TTL of the circuit.

The article contains 6 figures, 2 tables, and 4 bibliographic references.

UDC 621.396.6-181.5

Basic Ways of Increasing the Quality of Logic Integrated Microcircuits. Yanushonits, S.S. In the Collection *Mikroelektronika*, No 5, p 110, Sovetskoye Radio Publishing House, 1972.

This article defines the functional relationship between the product  $PT$  and other physical parameters of space, bounded by an arbitrary surface. On the basis of the obtained dependence the article discusses ways of increasing the speed of response and decreasing the scattering power of the logic integrated microcircuits.

The article contains 2 bibliographic references.

UDC 621.382.21

Use of Nonlinear Programming for Optimal Computation of the Geometric Dimensions of the Regions of Transistors of Integrated Circuits. Kazanov, G.G., Balasov, B.V., Lobodina, A.V., and Rudenko, A.A. In the Collection *Mikroelektronika*, No 5, p 118, Sovetskoye Radio Publishing House, 1972.

A method is suggested for solving problems of synthesizing active components based on the use of nonlinear programming equipment. The article gives a block-diagram of the program algorithm and a specific example of the optimal computation of the geometric dimensions of the regions of a transistor for an integrated semiconductor circuit.

The article contains 4 figures, 1 table, and 8 bibliographic references.

UDC 621.396.6-181.5

Structure of Micropower Integrated Internal Memories on Uniform Subsystems on Supplemented MDP Transistors. Gordayev, B.K. et al. In the Collection *Mikroelektronika*, edited by I.V. Lukin, No 5, p 128, Sovetskoye Radio Publishing House, 1972.

USSR

UDC 621.382.8.001.24:621.314.33

ANISIMOV, B.V., KAZENNOV, G.G., NORENKOV, I.P.

"Concerning Some Problems Of Mechanical Design Of Integrated Circuits"

V sb. Mikroelektronika (Microelectronics--Collection Of Works), Moscow, Izd-vo "Sovetskoye Radio," No 4, 1971, pp 249-256

Abstract: In addition to the stage of designing the principal electrical circuits, planning of microcircuits includes a stage for the design of active components and topology. Problems originating at these stages are considered as well as problems of the use of machine methods for their solution. A detailed diagram is shown of the stages and the problems of a system of automatic planning. 1 fig. 15 ref.

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UDC 621.396.6-181.5

BATALOV, B. V., KAZENNOV, G. G., KOTKO, A. P., KURMAYEV, P. A., RUDENKO, A. A.

"Evaluating the Uniformity of Parameters of Transistors in Integrated Semiconductor Circuits"

Elektron. prom-st'. Nauch.-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1971, No 1, pp 47-50 (from RZh-Radio-tekhnika, No 7, Jul 71, Abstract No 7V271)

Translation: A procedure is developed for quantitative evaluation of the degree of uniformity of the parameters of transistors in integrated semiconductor circuits. The procedure can be used for designing circuits as well as for inspection under production conditions. Taken as the measure of uniformity is the pair correlation coefficient which enables determination of the conditional distributions of parameters.

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Welding

USSR

UDC 621.791.053.002.612:658.386

BOTINOV, S. N., KAZENNOV, YU. I., AGAPOVA, N. P., PAL'CHUK, N. YU. (Candidates of Technical Sciences), PROKHOROV, V. I., REVIZNIKOV, L. I., BOBYLEV, A. P., KRASINA, T. A., KRYLOV, YE. A., BALASHOV, V. D., ZINKOVSKIY, V. I., SYCHEV, R. S. (Engineers)

"Effect of Irradiation on the Properties of Welds of High-Alloy Steels and Alloys"

Moscow, Svarochnoye Proizvodstvo, No 3, Mar 70, pp 4-6

Abstract: The effect of neutron irradiation on the short-term mechanical properties of basic metals and welds from 00Kh16N15M3B, 0Kh16N15M3B, and 0Kh20N40B austenitic steels and 1Kh132BFR ferrite-martensite steel was investigated. The mechanical properties were determined on samples cut in the longitudinal direction from argon-arc welds using an infusible electrode. The samples were irradiated in the active zone of a reactor at about 100°C. The theoretical neutron flux density was  $10^{15}$  neutron/cm<sup>2</sup>. sec. Some samples received a dose of  $2.8 \times 10^{21}$  neutron/cm<sup>2</sup>, while others received a dose of  $4.3 \times 10^{21}$  neutron/cm<sup>2</sup>. The mechanical properties were determined on UMD-5 tensile testing machines at air temperatures of 20, 350, and 650°C.

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BOTINOV, S. N. et al, Svarochnoye Proizvodstvo, No 3, Mar 70, pp 4-6

Tests conducted at 20°C showed that strength properties of all samples increased after irradiation; plasticity decreased. The tensile and yield strengths of weld metals with an austenitic structure increased to a lesser degree than those of the base metals. The mechanical properties of all samples at 350° did not differ from those of the base metals. A decrease in tensile and yield strength with a simultaneous decrease in plasticity was observed in samples with an austenitic structure in tests conducted at 650°C. These decreases were especially noticeable in irradiated samples made from 40% Ni steel. The possible cause of the sharp decline in the intergrain strength and plasticity observed at 650°C in the irradiated metal with high nickel content is suggested. Orig. art. has: 2 figures, 4 tables, and 5 references.

2/2

1/2 042 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--THE EFFECT OF IRRADIATION ON THE PROPERTIES OF WELDS IN HIGH ALLOY  
STEELS -U-  
AUTHOR--(05)-VGTINOV, S.N., KAZENNOV, YU.I., AGAPOVA, N.P., PALCHUK, N.YU.,  
PRUKHLROV, V.I.  
COUNTRY OF INFO--USSR

SOURCE--MOSCOW, SVAROCHNOYE PROIZVODSTVO, NO 3, 1970, PP 4-6

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--HIGH ALLOY STEEL, ALLOY DESIGNATION, MECHANICAL PROPERTY,  
BIBLIOGRAPHY, IRRADIATION, NUCLEAR METALLURGY, WELD JOINT, METAL TEST,  
WELDING/(U)GKH16N15M3B STAINLESS STEEL, (U)OOKH16N15M3B STAINLESS STEEL,  
(U)GKH20N40B STAINLESS STEEL, (U)IKH13M2BFR STAINLESS STEEL, (U)UMD5  
STAINLESS STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1999/1303

STEP NO--UR/0135/70/000/003/0004/0006

CIRC ACCESSION NO--AP0123262

UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123262

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MECHANICAL PROPERTIES WERE DETERMINED OF SAMPLES CUT OUT FROM THE METAL OF WELDS IN OOKH16N15M3B, GKHI6N15M3B, OKH20N40B, AND 1KH13M2BFR STEELS FOLLOWING IRRADIATION WITH A DOSE OF 2.8 TIMES 10 PRIME21 NEUTR,CM PRIME2 AND 4.3 TIMES 10 PRIME21 NEUTR,CM PRIME2 (E LARGER THAN OR EQUAL TO 1 MEV) AT A TEMPERATURE OF ABOUT 1CODEGREESC. TESTS WERE CARRIED OUT USING UMD-5 BREAKING MACHINES AT 20, 350, AND 650DEGREESC IN THE AIR.

UNCLASSIFIED

Pharmacology and Toxicology

USSR

ROSIN, Ya. A., and KAZENNOVA, I. I., Institute of Higher Nervous Activity and Neurophysiology, Academy of Sciences USSR, Moscow

"Application of the Hematoencephalic Barrier for Ribonuclease"

Moscow, Biofizika, Vol 15, No 5, Sep/Oct 70, pp 920-922

Abstract: Determination in the brain of RNA-ase conjugated with fluorescein thiocyanate was found to be a suitable means of investigating the permeability of the hematoencephalic barrier for RNA-ase. It was established that the RNA-ase did not lose its activity on being conjugated with the dyestuff. On local introduction of RNA-ase labelled with fluorescein isothiocyanate into the rat brain, the RNA-ase penetrated into nerve cells of various sections of the brain, as indicated by the typical fluorescence along the periphery of the cells in brain preparations. The method described is being applied in studies of the penetration into divisions of the brain of RNA-ase introduced in various ways.

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USSR

UDC 619:616.983.43:615.372

KRUGLIKOV, B. A., ANTONYUK, V. P., YURCHENKO, A. N., IRONCHEN, S. N., and  
KAZENOV, N. I., State Scientific Control Institute of Veterinary Preparations,  
Kok-Yangak Veterinary Station, Oshskaya Oblast

"Transport and Storage of Foot-and-Mouth Disease Vaccines"

Moscow, Veterinariya, No 5, May 71, pp 49-50

Abstract: In storing and transporting foot-and-mouth disease vaccines with aluminum hydroxide formaldehyde composition, the optimum temperature conditions (from +1 to +3°C) must be maintained. This is important when the vaccines are transferred from the production plant to the various veterinary stations, particularly in the spring and summer, when mass immunizations of cattle are performed in the Soviet republics of Central Asia and in the Transcaucasian region. Polyethylene bags of various sizes were tested for this purpose. For the transport of 4-5 liters of vaccine, polyethylene bags 200 mm long and 900 mm wide were most practical. Two such bags are used, one inside the other. The inner bag should be 150-200 mm smaller than the external one. The internal bag contains the vaccine and is surrounded by ice (in the external bag). Both bags are closed by a plastic ring on top. The filled bags are placed in precooled ice chests and cooling boxes. The proposed bags were used under conditions

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KRUGLIKOV, B. A., et al, Veterinariya, No 5, May 71, pp 49-50

of +21, +25, and +28°C and kept the temperature of the control flacon at +4°C to +7°C for a period of 6-8 hours. When a freezing mixture (ice+salt) instead of ice is used, the temperature of the vaccine flacons is kept at 2-4°C, but for a shorter time period because of breakdown of the ice crystals. The proposed double bags of polyethylene are cheap, convenient to use at any veterinary station, and sufficient for bringing the vaccine to the immunization site.

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USSR

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KAZHBEROV, V., KUL'GACHEV, A., LEVCHENKO, YU., Engineers

"Underwater Communication Set"

Moscow, Radio, No 10, 1970, pp 42-45

Abstract: An article for electronic enthusiasts describing an ultrasonic transceiver for communication between skin divers and shore personnel, operating at a frequency of 72 KHz. The output power of the transmitter section without modulation is about 1.5 watts. Sound is transformed into electricity by laryngophones of the LT-5 type, and the percentage modulation is 80 percent with nonlinear distortion of 10 percent or less. The unit is fully transistorized, with a transmit-receive switch, and the radiating device is piezoelectric with an efficiency of about 30 percent. A complete schematic of the circuit with component values is given, together with a textual description of its makeup and operation. Photographs of the device, packed into a tube 70 mm in diameter, 450 mm in length, with a wall thickness of 2 mm, are shown.

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USSR

UDC 632.95

STEPANOV, M. K., OSIPYAN, V. T., KAZHDAN, V. B., MASLIY, L. K., GRABOVSKIY, B. S., and DUNAYEVA, I. D.

"A Method of Controlling Fleas"

USSR Author's Certificate No 263328, filed 16 Mar 62, published 26 May 70  
(from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N569)

Translation: Hexamethylenecarbamide (I) is proposed for use as a flea repellent. The substance is an oily, colorless, odorless liquid with a boiling point of 153°C/3 mm,  $d_4^{20}$  1.0489,  $n_D^{20}$  1.5161. Compound I is synthesized by bubbling  $\text{COCl}_2$  at 5-10°C through a solution of hexamethylene diamine in an appropriate solvent. The preparation is stable. In 30 days of storage under conditions of intense ventilation, 20-25 percent of compound I or less was volatilized.

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USSR

UDC 615.285.7:547.551.525.211.27.099

KAZHDAN, V. B., KULESHOV, V. I., POZHARISSKAYA, T. D., and SAVINSKIY, YA. R., Military-Medical Academy imeni S. M. Kirov

"Toxicological Studies of the New Insect Repellent Hexamethylenebutanesulfamide"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolesni, No 2, 1970, pp 220-224

Abstract: The recently developed repellent hexamethylenebutane-sulfamide (HEBS) -  $C_{12}H_{25}SO_2N(CH_2)_6$  - was as active as diethyltoluamide and equally effective against fleas, ixodid ticks, mosquitos, gnats, midges, and horseflies. Tests on mice, rabbits, and human beings showed that it has low toxicity. The LD50 for white mice was 7360 mg/kg when applied to the skin, 5400-6480 mg/kg when injected into the stomach, and 519 mg/kg when injected intraperitoneally. Twenty-five daily cutaneous applications of HEBS in a dose of 1 g/kg 1 ml per 100 cm<sup>2</sup> produced in rabbits local inflammation in the surface layers, but no systemic pathological reactions. Daily topical applications of smaller doses (0.2-0.4/100 cm<sup>2</sup>) caused only mild hyperemia and edema of the skin after 2-4 applications, but after 1 or 10 days the symptoms began to disappear and a crust formed

USSR

KAZHDAN, V. B., et al., Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, No 2, 1970, pp 220-224

which was eventually sloughed off. similar applications of HDS to human skin (0.4 ml/100 cm<sup>2</sup> for 25 days) failed to produce disagreeable subjective sensations (itching, burning, etc.) or any pathological changes (dryness, scaling, hyperemia, or pigmentation).

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1/2 016 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--TOXICOLOGICAL TRIALS OF A NEW INSECT REPELLENT HEXAMETHYLENE  
BUTANSULFAMINDE -U-  
AUTHOR--(04)--KAZHDAN, V.B., KULESHOV, V.I., POZHARISSKAYA, T.D., SAVINSKIY,  
YA.R.  
COUNTRY OF INFO--USSR  
SOURCE--MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLENZI, 1970, VOL  
39, NR 2, PP 220-224  
DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INSECT REPELLENT, TOXICOLOGY, METHYLENE, BUTANE, AMIDE, WHITE  
MOUSE, ORGANIC SULFUR COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1990/1434

STEP NO--UR/0358/70/039/002/0220/0224

CIRC ACCESSION NO--AP0109494

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--09OCT70

2/2 016

CIRC ACCESSION NO--AP0109494

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. AS A RESULT OF TOXICOLOGICAL INVESTIGATION OF A NEW INSECT REPELLENT, HEXAMETHYLENEBUTANSULFAMIDE (HMBS), THE AUTHORS ESTABLISHED THAT THIS DRUG HAD LOW TOXICITY FOR WARM BLOODED ANIMALS. ITS LD SUB50 FOR WHITE MICE WAS 7560 MG-KG IN EPICUTANEOUS APPLICATION, 519 MG-KG, BY THE INTRAPERITONEAL ROUTE AND 5400-6480 MG-KG, BY INTRODUCTION INTO THE STOMACH. MULTIPLE (25 TIMES) DAILY APPLICATION OF HMBS TO THE SKIN OF RABBITS IN A DOSE OF 1 G-KG (DENSITY OF 1 ML-100 CM PRIME2) PRODUCED IN THE ANIMALS NO PATHOLOGICAL MANIFESTATIONS OF GENERAL CHARACTER. TOPICALLY UNDER THESE CONDITIONS, FOCAL INFLAMMATORY SIGNS DEVELOPED IN SUPERFICIAL LAYERS OF THE SKIN. IN SIMILAR APPLICATIONS OF THE DRUG IN A DOSE OF 0.4 ML-100 CM PRIME2 THE RABBITS DEVELOPED ONLY MILD HYPEREMIA OF THE SKIN AFTER 2-4 APPLICATIONS, BUT IT DISAPPEARED IN A FEW DAYS DESPITE FURTHER APPLICATION OF THE REPELLENT. DAILY 25 TIME APPLICATION OF HMBS TO THE HUMAN SKIN IN A DOSE OF 0.4 ML-100 CM PRIME2 WHICH EXCEEDED 2 FOLD THE DOSE RECOMMENDED FOR PRACTICAL PURPOSES PRODUCED NO LOCAL CHANGES.

FACILITY: VOYENNO-MEDITSINSKAYA AKADEMIYA IM. S. M. KIROVA, LENINGRAD.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--METHODS FOR COMBATTING FLEAS -U-

AUTHOR--(05)--STEPANOV, M.K., OSIPYAN, T.V., KAZHDAN, V.B., MASLIY, L.K.,  
GRABOVSKIY, B.S.  
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,328  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(7)  
DATE PUBLISHED--04FEB70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FLEA, INSECTICIDE, CHEMICAL PATENT, AMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1561

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128956

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70  
CIRC ACCESSION NO--AA0128956  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEXAMETHYLENECARBAMIDE WAS USED AS  
A FLEA REPELLENT.

UNCLASSIFIED

USSR

UDC 539.3:534.1

KAZHDAN, YA. M., Moscow

"Asymptotics of a Flow when a Shock Wave Hits a Wedge-Shaped Cavity"


Moscow, Zhurnal Prikladnoy mekhaniki i tekhnicheskoy fiziki, No 3, 1972, pp 129-138

Abstract: A study was made of the asymptotics of motion occurring as a result of incidence of a shock wave on a wedge-shaped cavity in a metal when the wave amplitude approaches zero. It was demonstrated previously [S. K. Godunov, et al., Zhurnal Prikladnoy mekhaniki i tekhnicheskoy fiziki, No 6, 57-61, 1969] that the flow is divided into two regions in this case. In the first region the main term defining the flow coincides with the sonic approximation. In the second region the flow in the principal term is described by the equations of an incompressible liquid. The definition of the flow in the second region is reduced to solving a singular nonlinear integral equation. The numerical solution was found on the BESM-4 computer for a series of values of the angles of opening of the cavity. For  $\gamma = \pi/4$ , the incidence of the shock wave on the wedge-shaped cavity was calculated by the difference method.

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1/2 041 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--GRAVITATIONAL COMPRESSION OF A SPHERICAL CLOUD -U-  
AUTHOR-(02)-ZELOVICH, YA.B., KAZHDAN, YA.M.   
COUNTRY OF INFO--USSR  
SOURCE--ASTROFIZIKA, VOL. 6, FEB. 1970, P. 109-122  
DATE PUBLISHED----FEB70  
  
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS  
TOPIC TAGS--GAS DYNAMICS, GRAVITATION, SHOCK WAVE REFLECTION, ASTROPHYSICS  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/1758 STEP NO--UR/0388/70/006/000/0109/0122  
CIRC ACCESSION NO--AP0125374  
UNCLASSIFIED

2/2 041

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0125374

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF TWO PROBLEMS OF GASDYNAMICS UNDER THE ACTION OF GRAVITATION: (1) THE COMPRESSION OF A GAS OF FINITE PRESSURE AND SPHERICALLY UNIFORM INITIAL DENSITY DISTRIBUTION, AND (2) THE COMPRESSION OF A COLD GAS OF NONUNIFORM INITIAL DISTRIBUTION. THE ASYMPTOTIC FEATURES OF GAS MOTION ARE DETERMINED FOR THE FIRST PROBLEM IN THE NEIGHBORHOOD OF THE CENTER AND NEAR THE RAREFACTION WAVE BOUNDARY PROPAGATING TOWARD THE CENTER AT TIMES CLOSE TO THE INSTANT OF THE RAREFACTION WAVE'S FOCUSING WHEN THE INITIAL DENSITY TENDS TO ZERO. THE FINITE STATE OF THE GAS AT TIMES TENDING TO INFINITY IS ALSO STUDIED. IN THE SECOND PROBLEM, THE GAS NEAR THE CENTER IS STUDIED AFTER REFLECTION OF THE SHOCK WAVE. FACILITY: AKADEMIIA NAUK SSSR, INSTITUT PRIKLADNOI MATEMATIKI, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 534.86

KAZHENE, S., KAZHIS, R.-I., and DOMARKAS, V.

"Dependence of the Acoustical Impedance of a Piezoelectric Converter With a Transition Region on the Electrical Load"

Nauch. tr. vyssh. ucheb. zavedeniy LitSSR. Ul'trazvuk (Scientific Works of the Lithuanian VUZ; Ultrasonics) No 4, 1972, pp 65-69 (from RZh--Fizika, No 4, 1973, Abstract No 4Zh672)

Translation: General expressions are obtained for the acoustical impedance of a piezo-converter with the transition region and the electrical load taken into account. The effect of the electrical circuits on the amount of acoustical impedance is analyzed at the antiresonant frequency of the converter. It is shown that the converter loaded by an inductance and an active resistance can be given an acoustical impedance equal to the characteristic acoustic impedance of the working medium. In the case of liquid working media, a match between the converter and the working medium can easily be attained with a quarter-wave transition region. Authors' abstract

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UDC: 534.86

USSR

KAZHENE, S., KAZHIS, R.-I., and DOMARKAS, V.

"Dependence of the Acoustical Impedance of a Piezoelectric Converter With a Transition Region on the Electrical Load"

Nauch. tr. vyssh. ucheb. zavedeniy LitSSR. Ul'trazvuk (Scientific Works of the Lithuanian VUZ; Ultrasonics) No 4, 1972, pp 65-69 (from RZh--Fizika, No 4, 1973, Abstract No 4Zh672)

Translation: General expressions are obtained for the acoustical impedance of a piezo-converter with the transition region and the electrical load taken into account. The effect of the electrical circuits on the amount of acoustical impedance is analyzed at the antiresonant frequency of the converter. It is shown that the converter loaded by an inductance and an active resistance can be given an acoustical impedance equal to the characteristic acoustic impedance of the working medium. In the case of liquid working media, a match between the converter and the working medium can easily be attained with a quarter-wave transition region. Authors' abstract

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USSR

UDC: 534.86

DOMARKAS, V. and KAZHIS, R.-I.

"Frequency Characteristics of Piezoelectric Pickups With Transition Regions and Electrically Matching Circuits"

Nauch. tr. vyssh. ucheb. zavedeniy LitSSR. Ul'trazvuk (Scientific Works of the Lithuanian VUZ; Ultrasonics) No 4, 1972, pp 71-78 (from RZh--Fizika, No 4, 1973, Abstract No 4Zh673)

Translation: The authors consider the effect of electrically matching circuits with the frequency characteristics of piezoelectric pickups with transition regions operating in water. It is shown that, in the case of a half-wave transition region, the pickup loaded by a parallel-connected inductance and an active resistance has four maxima in its amplitude-frequency characteristic. Linearity of the phase-frequency characteristic thus cannot be achieved by a choice of damper and circuit-matching parameters. A pickup with a quarter-wave transition region and with the circuit specified above has three maxima in its amplitude-frequency characteristic. By choosing the degree of mechanical damping and the Q of the electrical circuit for piezoelectric ceramic pickups with a quarter-wave transition region, a relative pass band of 75% of the antiresonant frequency of a piezoelectric converter with good linearity of the phase-frequency characteristic can be attained.

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USSR

UDC 534.232

K  
KAZHIS, E. I., DOMARKAS, V. I., Kaunas Polytechnical Institute

"A Piezoelectric Receiver of Acoustic Oscillations"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki,  
No. 23, 1970, Author's Certificate No 276551, Filed 20 Jan 69, p 147

Abstract: This author's certificate introduces a piezoelectric receiver of acoustic oscillations made in the form of a mechanically undamped piezoelectric plate. As a distinguishing feature of the patent, the passband is extended by connecting an active electrical circuit in parallel with the mechanically undamped piezoelectric plate, this circuit having the input impedance of the static capacitance of the piezoelectric plate.

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Devices

USSR

UDC 621.391

KAZHUKAUSKAS, V. A.

"A Device for Determining the Characteristics of a Clipped Speech Signal"

Vil'nyus, Nauchnyye trudy vysshikh uchebnykh zavedeniy Lit. SSR. Avtomatika i vychislitel'naya tekhnika (Scientific Works of Institutions of Higher Education of the Lithuanian SSR. Automation and Computer Technology), No 2, 1970, "Mintis", pp 113-116

Abstract: The paper describes a device designed for digital computer input of information on the sign and duration of a clipped speech signal. Two illustrations, bibliography of five titles.

1/1

1/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT71

TITLE--ADDITION REACTIONS OCCURRING AT THE DOUBLE BOND OF DELTA PRIME2  
DIHYDROTHIOPYRAN -U-  
AUTHOR--(04)--BLAGOVESHCHENSKIY, V.S., KAZIMIRCHIK, I.V., IVANOVA, M.I.,  
ZEFIROV, N.S.  
COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 877-9

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CONDENSATION REACTION, THICL, HETEROCYCLIC OXYGEN COMPOUND,  
PHOSPHORUS SULFIDE, ORGANIC SYNTHESIS, ORGANIC SULFUR COMPOUND, ORGANIC  
PHOSPHORUS COMPOUND, PESTICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/2067

STEP NO--UR/0366/70/006/004/0877/0879

CIRC ACCESSION NO--AP0125654

UNCLASSIFIED



2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125654  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. CONDENSATION OF DELTA PRIME2 DIHYDROTHIOPYRAN (I) WITH ALCS. IN ET SUB2 O SOLN. CONTG. HCL GAVE 2 (OR 3), R, SUBSTITUTED, TETRA, HYDROPYRANS (II) (R IS OME, OBU). SIMILARLY, TREATING I WITH BUSH GAVE II (R EQUALS SBU). I WITH DIALKYL DITHIOPHOSPHATES GAVE II (R IS SP(:S)(OME) SUB2 OR SP(:S)(DET) SUB2). THE REACTIONS OF I WITH TETRA-ET BISTHIOPHOSPHATE GAVE 2,4,3,R PRIME1, DI, SUBSTITUTED, TETRAHYDROPYRAN (III) (R AND R PRIME1 ARE SP(:O)(DET) SUB2). SIMILARLY, I REACTED WITH HG(OAC) SUB2 IN MECH TO GIVE III (R EQUALS OME, R PRIME1 EQUALS HGOAC), WHICH WAS CONVERTED INTO III (R EQUALS OME, R PRIME1 EQUALS HGCL). II AND III ARE POTENTIAL PESTICIDES. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--DYNAMICS OF SYSTEMS OF CONTROL AT LOWER LIMIT OF RANGE OF  
CONTROLLING UNDER NONLINEAR DAMPING -U-  
AUTHOR-(05)-DANILOV, YU.A., KAZMIRENKO, V.F., KUZMIN, A.N., PARFENOV,  
A.S., PETROV, YU.A.  
COUNTRY OF INFO--USSR  
SOURCE--AVTOMATIKA I TELEMEXHANIKA, 1970, NR 3, PP 162-173  
DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--DYNAMIC SYSTEM, NONLINEAR AUTOMATIC CONTROL SYSTEM, HARMONIC  
FUNCTION, LINEAR APPROXIMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/1474

STEP NO--UR/0103/70/000/003/0162/0173

CIRC ACCESSION NO--AP0106230

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106230

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERE ARE CONSIDERED CONTINUOUS CONTROL SYSTEMS WITH NONLINEARITIES EXISTING IN THE LOADING OF THE EXECUTIVE COMPONENT THE INFLUENCE OF WHICH IS ESSENTIAL AT THE LOW SPEEDS OF THE MOVEMENT. THE METHOD OF HARMONIC LINEARIZATION IS USED TO DETERMINE THE CONDITIONS OF THE ORIGIN OF AUTO OSCILLATIONS AS WELL AS THE POSSIBILITY OF USING THEM TO ACHIEVE THE EFFECT OF VIBRATIONAL LINEARIZATION. THE RESULTS OF THE INVESTIGATION HAVE BEEN EXPERIMENTALLY PROVED.

UNCLASSIFIED

USSR

UDC 621.396.722(088.8)

KAZIMIROV, R. A., VENEDIKTOV, M. D.

"Receiver for Multichannel Asynchronous Communication Systems"

USSR Author's Certificate No 290249, filed 29 Aug 1969, published 26 Feb 1971,  
(from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D79P)

Translation: A receiver is proposed for multichannel asynchronous communication systems with time-frequency division of the channels and significantly reduced intrasystem noise by comparison with the known ones. The device contains a radiofrequency amplifier and a frequency converter the output of which is connected to the decoding coincidence cascade via several signal processing channels. Each of the latter includes a series-connected narrow band filter, an intermediate frequency amplifier, a detector and a delay line. A correction time coincidence cascade is connected to each channel between the detector output and the corresponding delay line. The second inputs of all the correcting channels are connected to the output of the converter via a series-connected wide band logarithmic amplifier, a special detector and a shaping cascade.

1/1

USSR

UDC: 621.396.4

KAZIMIRGV, B. A.

"A Device for Automating Selection and Actuation of a Relay Station"

USSR Author's Certificate No 266867, filed 10 Oct 68, published 15 Jul 70  
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D377 P)

Translation: This Author's Certificate introduces a device for automatically selecting and actuating relay units in an asynchronous multichannel address communications system. The device contains a delay line, control register and controlled rectifiers. To select the relay unit by address substitution when call signals pass through the relay station from the calling party to the called party and eliminate selection with passage of signals in the reverse direction, the output of the input delay line is connected to the output of the device in parallel through one diode and through a network of a second diode and delay line, while the taps of the input delay line are connected through the register to the taps of the above-mentioned delay line. The register outputs are connected in turn to the control inputs of the diodes and relay unit. Two illustrations. V.P.

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USSR

UDC 621.395.64

KAZIMIROV, B. A.

"A Device for Automatic Selection and Actuation of Radio Relay Units"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratztsy, Tovarnyye Znaki, No 12, 1970, Author's Certificate No 266867, filed 10 Oct 68, p. 48

Abstract: This Author's Certificate introduces a device for automatic selection and actuation of radio relay units in a multichannel address communications system. The unit contains delay lines, a control register and controlled diodes. As a distinguishing feature of the patent, the device is designed for relay unit selection by address substitution when call signals pass through the relay unit from the calling station to the called station, and address elimination when signals pass in the opposite direction from the called station to the calling station. The output of the input delay line is connected to the output of the device, and in parallel through one diode, and through the network from the second diode and the delay line. The leads of the input delay line are connected through a register to the leads of the above-mentioned delay line, the register outputs being connected to the control inputs of the diodes and the relay unit.

1/1

Aluminum and Its Alloys

USSR

UDC: 546.3-19'682'67

BATALIN, G. I., KAZEMIROV, V. P. and DMITRUK, B. F., Kiev

"Structure and Electrical Resistance of Molten Aluminum"

Moscow, Izvestiya Akademii nauk SSSR, Metally, No 1, Jan-Feb 72, pp 88-94

Abstract: Described is an x-ray diffraction study of the structure of molten aluminum at 720, 1020, 1400°C. The intensity lines were produced on a diffractometer in molybdenum K<sub>α</sub> radiation monochromatized with a pair of Zr-Y differential filters. The maximum statistical calculation error in the experimental intensity lines was 3% for 720 and 1020°C and 4.5% for 1400°C. The results indicate that structurization in molten aluminum occurs on the basis of a blurred face-centered cubic lattice up to 1400°C. The principal changes in the shape of the radial atomic distribution curves are related to the intensification of thermal atomic motion due to increasing temperatures resulting in a gradual leveling of the first and second maxima on the curves. The discrepancy of the computed electrical resistance values from the experimental data is likely to be attributed to the extreme sensitivity of the calculation to both the height and steepness of the first maximum

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USSR

BATALIN, G. I., et al, Izvestiya Akademii nauk SSSR, Metally, No 1, Jan-Feb 72, pp 88-94

structural factor as well as to the magnitude and form of the employed pseudopotential. (3 illustrations, 4 tables, 17 bibliographic references).

2/2

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USSR

UDC 621.791.019:546.17

ZUBCHENKO, A. S., L'vov Polytechnical Institute, TIMOFEEV, M. M., KAZEMIROV-SKAYA, YE. L., Central Scientific Research Institute of Technology and Machine Building, and KOLYADA, A. A., (VNIIPKhimmach)

"Effect of Nitrogen on Cold Brittleness of Heat-Resistant Kh25Yu5 Steel"

Kiev, Avtomaticheskaya Svarka, No 9, Sep 70, pp 8-9

Abstract: The effect of nitrogen on the cold brittleness of 220 x 120 x 30 mm samples from a metal fused in an open induction furnace was investigated. The nitrogen content in the fused metal was controlled by introducing nitrided ferrochromium into the crucible. The chemical composition and mechanical properties of the tested metal are presented in tables. They show that an increase in nitrogen content in the Kh25Yu5 steel substantially reduces its strength and impact strength. The dependence of impact strength and mechanical properties on test temperature, and the effect of nitrogen on the critical temperature of the transition of the steel into the brittle state are shown in graphs. It can be assumed that the temperature of equilibrium nitrogen concentration in the solid solution of Kh25Yu5 steel coincides with the critical temperature of the transition of the steel into a brittle state.

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USSR

UDC 621.396.677.71

GARB, KH.L., KAZIMYANETS, V.N., FRIDBERG, P.SH.

"Radiation From A Narrow Transverse Slot On The Surface Of A Circular Cylinder"

Radiotekhnika i Elektronika, Moscow, Vol XVII, No 12, Dec 1972, pp 2504-2510

Abstract: The paper (which uses the international system of units) considers an endless circular cylinder with an ideally conducting surface of zero thickness in which there is a narrow ( $\alpha \ll 1$ ) transverse slot. A "dimensionless" voltage on it satisfies a known integral-differential equation which is solved by the method offered in a previous work by P.Sh. Fridberg [Dokl. AN SSSR, 1970, 194, 1; Radiotekhnika i Elektronika, 1971, 16, 9, 1578]. A matrix of the scattering of the system is found. Numerical results are presented for the case of excitation of a waveguide by a  $H_{11}$  wave. A problem concerning deviation of the sinusoidal distribution of voltage from the actual is considered. The authors thank S. Gurevich and S. Khoziosk for conducting the numerical calculations on the G2-400 machine. 4 fig. 11 ref. Received by editors, 6 December 1971.

1/1

- 3 -

USSR

UDC 621.791.92:669.018.25

DMITRIYEV, V. V., Candidate of Engineering Sciences, Kazinskiy, L. R. and  
KIRSANOV, YU. KIRSANOV, YU. K., Engineers

"Equipment for Vacuum-Arc Build-up Welding of a Multi-Cutting High-Speed  
Steel Tool"

Moscow, IzVUZ-Mashinostroyeniye, No 12, 1972, pp 175-177

Abstract: The vacuum chamber from an ELU-4 electron-beam unit, partially  
modernized and equipped with additional mechanisms, was used at the Zhdanov  
Metallurgical Institute for investigating the vacuum-arc surfacing of a  
cutting tool. Pump VN-1 was replaced by a VN-4G pump which had a higher  
evacuation rate and provided a working vacuum of  $10^{-3}$ - $10^{-4}$  mm Hg in 5-6 minutes.

Technical specifications of the unit are as follows:

Vacuum chamber volume, liters .....	800
Maximum vacuum obtainable, mm Hg.....	$5 \times 10^{-5}$
Working vacuum, mm Hg .....	$10^{-3}$ - $10^{-4}$
Time to achieve working vacuum, min .....	5-6
Maximum sizes of parts being surface; mm .....	$\varnothing 300 \times 200$
Required power, kv	

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USSR

DMITRIYEV, V. V., et al., IzVUZ-Mashinostroyeniye, No 12, 1972, pp 175-177

a) during vacuum pump operation .....6.2  
b) during welding .....10  
Cooling water consumption, liter/hour .....500

Tests with the vacuum-arc surfacing unit, conducted jointly with the Zhdanov Heavy Machine Building Plant, warranted it being recommended for use in surfacing operations. 2 figures, 1 table.

2/2

- 80 -

1/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--ANATOMO SURGICAL EVALUATION OF OPERATIVE APPROACHES TO THE BODIES  
OF LOWER CERVICAL AND UPPER THORACIC VERTEBRAE --U-  
AUTHOR--(02)-KHVISHYUK, N.I., KAZITSKIY, V.M. **K**

COUNTRY OF INFO--USSR

SOURCE--ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE, 1970, NR 6, PP 47-51

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, BEHAVIORAL AND SOCIAL  
SCIENCES  
TOPIC TAGS--THORACIC--SURGERY, MEDICAL TRAINING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3003/0917

STEP NO--UR/9115/70/000/006/0047/0051

CIRC ACCESSION NO--AP0129982

UNCLASSIFIED

PROCESSING DATE--13NOV70

UNCLASSIFIED

2/2 016

CIRC ACCESSION NO--AP0129982  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. NINETY EIGHT EXPERIMENTAL OPERATIONS HAVE BEEN PERFORMED ON 64 CADAVERA OF ADULT SUBJECTS. THESE STUDIES REVEALED THAT APPROACHES ALONG THE ANTERIOR BORDER OF THE STERNOCLEIDOMASTOID MUSCLE, POSTERIOR MUSCLE BORDER, AND THE PARATRACHEAL APPROACH DO NOT ENSURE SUFFICIENT SPACE IN SIMULTANEOUS INTERVENTION ON THE BODIES OF SEVERAL VERTEBRAE OF THE CERVICAL AND UPPER THORACIC SECTIONS. THE APPROACH BY CERBICOSTERNOTOMY PERMITS PERFORMANCE OF RADICAL INTERVENTION ON THE VERTEBRAL BODIES OF THE TRANSITIONAL CERVICO THORACIC SECTION, BUT IS VERY TRAUMATIC. THE AUTHORS PROPOSE A NEW PARATRACHEAL EXTRAPLEURAL APPROACH WHICH PERMITS TO CREATE THE MOST FAVOURABLE CONDITIONS IN THE WOUND AND WHICH IS LESS TRAUMATIC THAN CERVICOSTERNOTOMY. THE USE OF THIS APPROACH IS INDICATED IN RADICAL INTERVENTION SIMULTANEOUSLY ON THE VERTEBRAL BODIES OF THE CERVICAL AND UPPER THORACIC SPINE SECTIONS WITH SUBSEQUENT ANTERIOR SPONDYLODESIS.

FACILITY: KAFEDRY ORTOPEDI I TRAVMATOLOGII

UKRAINSKOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY.

UNCLASSIFIED

1/2 031  
UNCLASSIFIED  
PROCESSING DATE--13NOV70  
TITLE--SPECTRAL STUDY OF THE ELECTRON DONOR CAPACITY OF TRIETHYL PHOSPHITE  
AS A METHOD FOR EVALUATING THE PURITY OF PHOSPHITES -U-  
AUTHOR--(05)-ERSHTEYN, L.M., NOVIKOVA, Z.S., ASHKINADZE, L.D., RUBASHEVA,  
L.A., KAZITSYNA, L.A.  
COUNTRY OF ORIGIN--USSR

SOURCE--IZV. AKAO. NAUK SSSR, SER. KHIM. 1970, (3), 689-90

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTRON DONOR, ALKYL PHOSPHITE, CHEMICAL PURITY, HYDROGEN  
BONDING, COMPLEX COMPOUND, ABSORPTION BAND SPECTRUM, ETHANOL,  
FLUORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/0082

STEP NO--UR/0062/70/000/003/0689/0690

CIRC ACCESSION NO--AP0125916

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--13NOV70

242 031

CIRC ACCESSION NO--AP0125916

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINCE THE FORMATION OF H BOND BETWEEN ETOH AND P(OT) SUB3 RESULTS IN A H COMPLEX WHICH GIVES AN ABSORPTION BAND AT 3560 CM PRIME NEGATIVE1 WITH A SHOULDER AT 3480 CM PRIME NEGATIVE1 (E., ET AL., 1969) THE APPEARANCE OF THE LATTER HAD BEEN SUGGESTED TO BE THE RESULT OF 2 TYPES OF SUCH COMPLEXES. HOWEVER SUCH A SHOULDER MAY BE CAUSED BY A SMALL AMT. OF ET SUB3 PO SUB4 WHICH CANNOT BE DETECTED BY THE SPECTRAL METHOD DIRECTLY. CAREFULLY PURIFIED P(OT) SUB3 AND ETOH GAVE AN IR SPECTRUM IN WHICH THE HO BAND WAS SYMMETRIC, BUT A BRIEF CONTACT WITH AIR RESULTED IN SHOULDER FORMATION AT 3460 CM PRIME NEGATIVE1 AT THE FREQUENCY AT WHICH THE COMPLEX OF ETOH AND ET SUB3 PO SUB4 HAS A BAND. TO EVALUATE THE SENSITIVITY OF THIS BAND THE SUITABLE CALIBRATION RUNS WERE MADE AND ET SUB3 PO SUB4 AT 0.07 MOLES-L. RESULTS IN THE SHOULDER OF THE BAND AT 1280 CM PRIME NEGATIVE1 WHILE AT 0.01-0.02 MOLES-L. THIS CAN NO LONGER BE OBSERVED, BUT THE ASYMMETRY OF THE 3460 CM PRIME NEGATIVE1 BAND IS STILL CLEARLY VISIBLE. CF SUB3 CH SUB2 CH IN PLACE OF ETOH ALLOWED SPECTROSCOPIC DETECTION OF ET SUB3 PO SUB4 EVEN AT 0.005 MOLES-L. THE INTEGRAL INTENSITY OF THE BAND OF THE COMPLEX OF ETOH WITH P(OT) SUB3 (3 TIMES 10 PRIME4 L. M PRIME NEGATIVE1 CM PRIME NEGATIVE1) WAS SMALLER THAN THAT OF ETOH WITH HC(OT) SUB3 (3.5 TIMES 10 PRIME4); CF SUB3 CH SUB2 CH GAVE SIMILAR RESULTS. THUS P(OT) SUB3 IS LESSEFFECTIVE ELECTRON DONOR IN RESPECT TO ALCS. THAN IS HC(OT) SUB3. FACILITY: INST. ELEMENTOORG. SGOEDIN, MOSCOW, USSR.

UNCLASSIFIED



1/2 021  
TITLE--ELECTRONIC STRUCTURE OF SUBSTITUTED DIAZOPHENOLS -U-  
AUTHOR-(02)-KAZITSYNA, L.A., KLYUYEVA, N.D.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1); 192-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ELECTRON STRUCTURE, AZO COMPOUND, PHENOL, BROMINATED ORGANIC  
COMPOUND, CHLORINATED ORGANIC COMPOUND, ORGANIC NITRO COMPOUND, ELECTRON  
DENSITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0641  
CIRC ACCESSION NO--AP0119553  
UNCLASSIFIED  
PROCESSING DATE--23OCT70  
STEP NO--UR/0062/70/000/001/0192/0194

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 021

CIRC ACCESSION NO--AP0119553  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE LCAO MO CALCNS. REPORTED  
EARLIER (K., ET AL. 1967) WERE EXTENDED TO 2- AND 4-DIAZOPHENOLS CONTG.

SUBSTITUENTS: 2-ME, 2,6-ME SUB2, 2-BR, 2,6-BR SUB2, 2,6-CL SUB2, 2-NO  
SUB2, 2,6-(NO SUB2) SUB2, 3,5-BR SUB2, 4-NO SUB2, 4,6-(NO SUB2) SUB2.  
THE ELECTRON DS. ARE IN FULL AGREEMENT WITH THE CHEM. PROPERTIES OF THE  
PHENOLS.

FACILITY: INST. ELEMENTORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--REVOLUTION IN CONTEMPORARY ASTRONOMY -U-  
AUTHOR--(02)-AMBARTSUMYAN, V.A., KAZIUTINSKIY, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--PRIRODA, NO. 4, 1970, P. 16-24  
DATE PUBLISHED--70  
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS  
TOPIC TAGS--ASTRONOMY, COSMOGONY, GALAXY, NUCLEUS, EXPLOSION, ASTROPHYSICS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/1489 STEP NO--UR/0026/70/000/004/0016/0026  
CIRC ACCESSION NO--AP0125117  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

2/2 013

CIRC ACCESSION NO--AP0125117

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OUTLINE OF CURRENT TRENDS IN ASTRONOMY WITH SPECIAL ATTENTION TO THEORIES CONCERNING THE INSTABILITY OF COSMOGONIC PHENOMENA. THE RED SHIFT, THE THEORY OF AN EXPANDING UNIVERSE, THE EXPLOSIVE PROCESSES IN GALACTIC NUCLEI, AND QUASISTELLAR SOURCES OF RADIATION ARE DISCUSSED AS THE MAJOR SCIENTIFIC BREAKTHROUGHS REVOLUTIONIZING MODERN ASTRONOMY. FACILITY: AKADEMIIA NAUK SSR, INSTITUT FILOSOFII, MOSCOW, USSR.

UNCLASSIFIED

UDC: 621.315.592  
USSR  
ABDULLAYEV, G. B., ALIYEVA, M. Kh., GORYACHEV, D. N., ~~FAZILYEV~~  
~~F. N.~~, PARITSKIY, L. G., and RYVKIN, S. M.

"Obtaining Photographic Images on Fine Films of Gallium and Indium Selenides"

Leningrad, Fizika i tekhnika poluprovodnikov, vol 6, No 6, 1972,  
pp 1166-1168

Abstract: This paper is a sequel to an earlier article by some of the authors named above (D. N. Goryachev, et al, 4, 1970, p 1580) published in the journal named above, in which the use of thin films of lead selenides and sulphides for retaining photographic images was discussed. In the present brief communication, the possibility of getting photographic images on thin films of gallium and indium selenides, of the lesser studied class of semiconductors of the  $Al_{1-x}Bi_x$  type, is considered. To do this, use is made of the dependence of the oxide reproduction process speed at the semiconductor-electrolyte interface on the illumination the semiconductor is exposed to. For the experiments described in this article, polycrystals of p-type GaSe were used in films 0.6 to 0.8  $\mu$  thick as well as n-type InSe in films about one micron thick, deposited on glass substrates by sputtering in a vacuum.

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UDC: 621.315.592

USSR

ABDULLAYEV, G. B., et al, Fizika i tekhnika poluprovodnikov, vol 6,  
No 6, 1972, pp 1166-1168

In the case of InSe, it was found that the images on it may be  
strengthened through the use of physical developers.

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1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--CHANGES IN CATALYTIC AND ADSORPTION PROPERTIES OF A RHODIUM  
CATALYST UPON THERMAL TREATMENT IN AN OXYGEN ATMOSPHERE -U-  
AUTHOR--(04)-KAZLAUSKIYENE, L., PLETYUSHKINA, A.I., KHOKHLOVA, M.N.,  
VOVCHENKO, G.D.  
COUNTRY OF INFO--USSR

SOURCE--VESTN. MOSK. UNIV., KHIM, 1970, 11(1), 67-9

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--RHODIUM, CATALYST ACTIVITY, OXYGEN, CATALYTIC REDUCTION,  
MALEIC ACID, ADSORPTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0599

STEP NO--UR/0189/70/011/001/0067/0069

CIRC ACCESSION NO--AP0119517

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 017

CIRC ACCESSION NO--AP0119517

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE ADSORPTION CAPACITY WITH RESPECT TO H WAS DETD. FOR A RH CATALYST AFTER THERMAL TREATMENT IN AN O<sub>2</sub> ATM. AT 25, 80, 150, AND 200DEGREES. THE ACTIVITY WAS DETD. FOR THE REDN. OF MALEIC ACID IN AN EXCESS OF H. THE LENGTH OF THE H REGION FOR THE CHARGE CURVES BECOMES SHORTER AS THE TEMP. OF THE TREATMENT IS INCREASED. AT 80DEGREES, THE ADSORPTION CAPACITY DECREASES BY 27PERCENT, AT 150DEGREES BY 30PERCENT, AND AT 200DEGREES BY 32PERCENT OF THAT FOR THE STARTING SAMPLE. THE BOND ENERGY OF THE H WITH THE RH SURFACE DOES NOT CHANGE AND IS EQUAL TO 54.4 KCAL-MOLE. THE SP. ACTIVITY DECREASES SHARPLY AT 150DEGREES WHICH IS EXPLAINED BY THE RECRYSTN. OF THE SURFACE DUE TO THE ORDERING OF THE STRUCTURE. THE ACTIVATION OF THE SAMPLE WHICH WAS OBSD. AT 200DEGREES IS ATTRIBUTED TO THE POSSIBLE ORIGIN OF NEW DEFECT STRUCTURES.

UNCLASSIFIED



USSR

K UDC 612.58:612.13:612.821.61

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ARYNCHYN, M. I., NIKITSIN, U. M., MATSKEVICH, B. I., ZEMAKINA, V. A.,  
KAZLOVA, L. M., ZEMAKIN, I. K., SHAFRANSKI, L. V.

"Differential (Complex) Hypothermia and Its Experimental and Theoretical Basis"

Minsk, Vesti Akademiyi Nauk BSSR, Seryya biyalagichnykh Navuk,  
No 1, 1970, pp 60-66

Abstract: A broad review of the applications of hypothermia is presented and the various biological functions involved, including EKG, biochemistry, hemodynamics, central and peripheral affects, etc. are discussed. An original construction of a cooling chamber is shown, consisting of two chambers, one for the head, and one for the body, in which the temperatures differ. The effect of two-chamber hypothermia, occurring under different degrees of temperature on various reflexes in dogs, hemodynamics, hormones, minerals, and blood proteins is discussed. Various clinical possibilities are discussed and the use of this apparatus in cardiac surgery is suggested.

1/1

1/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--ROLE OF THE INTERVERTEBRAL DISCS IN THE DEVELOPMENT OF SCOLIOSIS  
-U-  
AUTHOR--(02)-KAZNIN, A.I., PLOTNIKOVA, I.I.  
COUNTRY OF INFO--USSR  
SOURCE--ORTOPEDIYA, TRAVMATOLOGIIYA I PROTEZIROVANIYE, 1970, NR 6, PP 19-22  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--BONE DISEASE, ORTHOPEDIC SURGERY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3003/0902 STEP NO--UR/9115/70/000/006/0019/0022  
CIRC ACCESSION NO--AP0129957  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129967

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EIGHTEEN PATIENTS WITH IDIOPATHIC AND DYSPLASTIC SCOLIOSES WERE SUBJECTED TO CONTRAST STUDY OF NUCLEUS PULPOSUS AT THE APEX OF CURVATURE. A TOTAL OF 30 DISCS HAVE BEEN CONTRASTED. DISCOGRAPHY WAS CARRIED OUT DURING OPERATION OF DISCOTOMY AND WEDGE RESECTION. THE DISCOGRAMS REVEALED DEVIATION OF NUCLEI PULPOSA TOWARD THE CONVEX SIDE. SOME DISCS SHOWED SIGNS OF DEGENERATION. WEDGING OF THE VERTEBRAL BODIES WAS ONLY ENCOUNTERED IN CASES ASSOCIATED WITH DEGENERATION OF DISC AND ITS FIBROSIS.  
FACILITY: TSENTRAL'NOGO INSTITUTA TRAVMATOLOGII I ORTOPEDII.

UNCLASSIFIED

UDC 632.95

USSR

ARNOL'DOV, Ye. M., MITYAKINSKIY, V. I., GLADILIN, I. N., YAKUBA, A. R.,  
KOSTITSIN, B. A., KIVASHKO, V. K., KAZ'MIN, M. F., SHUL'MAN, V. N.

"A Method of Making the Discharge Form of Copper 2,4,5-Trichlorophenoxide"

USSR Author's Certificate No 345121, filed 14 Feb 69, published 9 Aug 72  
(from RZh-Ehimiya, No 9, May 73, abstract No 9N509P by T. G. Chekareva)

Translation: A method is proposed for making a commercial form of copper, 2,4,5-trichlorophenoxide (I) used in making poisons. A wet paste of compound I is filtered, pressed to a moisture content of 50-55%, loaded into a crank mixer, and mixed with talc and kaolin in a ratio of 1:1:2 respectively. The mixture is agitated for 1-2 hours. It is then loaded as a powder containing 16-20% moisture into a drier with a fluidized bed of inert material. The degree of moisturizing of the dry product in the cyclone is of the order of 96-97%.

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1/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--EFFECT OF HYDROCORTISONE ACETATE ON THE PENTOSE CYCLE OF EHRLICH  
ASCITES TUMOR CELLS -U-  
AUTHOR--(02)-BAGLEY, YE.A., KAZMIN, S.V. K  
COUNTRY OF INFO--USSR  
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(3), 713-16 (BIOCHEM)  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--HYDROCORTISONE, TUMOR, CELL PHYSIOLOGY, MITOSIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1985/1892 STEP NO--UR/0020/70/190/003/0713/0716  
CIRC ACCESSION NO--AT0101936  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

2/2 019

CIRC ACCESSION NO--AT0101936

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HYDROCORTISONE ACETATE INJECTED 3 TIMES AT 125 MG PER KG INTO MICE STARTING 5 DAYS AFTER TRANSPLANTATION OF EHRLICH ASCITES TUMOR CELLS INHIBITED THE TUMOR PENTOSE CYCLE ENZYMES, DECREASING THE RATE OF FORMATION OF PENTOSE AND SEDOHEPTULOSE 7,PHOSPHATE FROM FRUCTOSE 6,PHOSPHATE BUT NOT FROM RIBOSE 5,PHOSPHATE. HYDROCORTISONE ACETATE CAUSED REARRANGEMENT OF PENTOSE CYCLE FUNCTION FROM AN OXIDATIVE TO NONOXIDATIVE MECHANISM. THIS REARRANGEMENT MAY HAVE A NEG. EFFECT ON THE MITOTIC ACTIVITY OF TUMOR CELLS. FACILITY: UKR. NAUCH.-ISSLED. INST. EKSP. KLIN. ONKOL., KIEV, USSR.

UNCLASSIFIED

USSR

UDC: 517.949.12

KAZ'MIN, Ya. A.

"Uniqueness of the Solution for an Interpolation Problem, Part 2"

Novosibirsk, Sibirskiy Matematicheskiy Zhurnal, vol 13, No 3, 1972, pp 566-577

Abstract: This paper is the second part of an article begun in the vol. 13, No 2, 1972 by the author named above in the journal named above, regarding the interpolation problem of Abel. The problem was posed in the first installment; this second part studies the question of the uniqueness of the solution to the following interpolation problem: required, to investigate the uniqueness of the solution in any class of integral functions of any type of infinite uniform system of equations

$$\begin{cases} F^{(n)}(\alpha + hn) = 0, \\ F^{(n)}(\beta + hn) = 0, \end{cases} \quad n = 0, 1, 2, \dots,$$

where  $F(z)$  is the desired function of the class under consideration while the real numbers  $\alpha$ ,  $\beta$ , and  $h > 0$  in the equations above are given. It is assumed that, for  $\alpha = \beta$ , the system of equations has

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USSR

KAZ'MIN, Yu. A., Sibirskiy Matematicheskiy Zhurnal, vol 13, No 3,  
1972, pp 566-577  
the form

UDC: 517.949.12

$$\begin{cases} F^{(n)}(\alpha + hn) = 0, \\ F^{(n+1)}(\alpha + hn) = 0, \quad n = 0, 1, 2, \dots, \end{cases}$$

and corresponds to a widely known Abel uniform interpolation problem with the added condition that the multiplicity of the root  $\alpha + hn$  of the  $n$ -th order derivative of  $F(z)$  be no less than two.

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USSR

KAZNACHEYEV, V. I., MURAV'YEV, N. P.

UDC 577.4

"A Method of Synthesizing Complete Verification and Diagnostic Tests for Combination Circuits"

Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb. (Computer Technology in Machine Building. Scientific and Technical Collection), 1971, June, pp 183-192 (from RZh-Matematika, No 1, Jan 73, abstract No 1V636 by Kh. Madatyan)

Translation: The paper deals with the problem of constructing complete verifying and diagnostic tests for arbitrary combination circuits. In this connection, account is taken of the set of all failures of the type in which constants 0 and 1 are substituted for the variables at the inputs (outputs) of the logic elements in arbitrary combination. The function realized by the properly operating circuit is given by the so-called general disjunctive normal form  $\phi_0$ . A subformula  $\phi_\gamma$  is put into correspondence with each failure. Subsets of formulas  $\phi_\mu$  and  $\phi_\nu$  are isolated from the set of formulas  $\phi_\gamma$ . These subsets are characterized by the fact that they have some letters replaced by constants 0 and 1 as compared with  $\phi_0$ . According to the authors, a diagnostic test based on formulas  $\phi_\mu$  and  $\phi_\nu$  is a complete diagnosing test.

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USSR

KAZNACHEYEV, V. I., MURAV'YEV, N. P.

"Method of Synthesis of Full Checking and Diagnostic Tests for Combination Circuits"

Vychisl Tekhn. v Mashinostr. Nauch.-tekhn. sb. [Computers in Machine Building. Scientific and Technical Collection], June, 1971, pp 183-192 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V636 by Kh. Madatyan).

Translation: The problem is studied of constructing full checking and diagnostic tests for arbitrary combination circuits. The set of all defects such as replacement of constants 0,1 with variables at inputs (outputs) of logic elements in arbitrary combination is considered. The function realized by the properly operating circuit is fixed by the so-called general disjunctive normal form  $\phi_0$ . Each defect is compared to sum formula  $\phi_Y$ . Of the set of formulas  $\phi_Y$ , the subsets of formulas  $\phi_\mu$  and  $\phi_\nu$  are separated, characterized by the fact that several letters are replaced with constants 0 or 1. As the authors state, a diagnostic test based on formula  $\phi_\mu$  and  $\phi_\nu$  is a full diagnostic test.

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USSR

UDC: 577.4

KAZNACHEYEV, V. I.

"Complete Checking Tests of Combination Circuits"

Otbor i Peredacha Inform. Resp. Mezhved. Sb. [Collection and Transmission of Information, Republic Interdepartmental Collection], 1972, No 31, pp 71-77  
(Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V358, by Kh. Madatyan)

Translation: An analytic method is suggested for construction of full checking tests for combination circuits. The initial information used to construct the tests includes the formula of the logical algebra function realized by the circuits being tested. The formula is fixed in general disjunctive normal form. It is proven that the full checking test for these formulas coincides with the unit checking test.

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USSR

KAZNACHEYEV, V. I., MURAV'YEV, N. P. and MURAV'YEVA, N. V.

"Analytic Methods of Determination of Full Checking and Diagnostic Tests"

Tr. NII Grazhd. Aviatsin [Works of the Scientific Research Institute for Civil Aviation], 1973, No 83, pp 42-55 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V803)

Translation: A method is suggested for construction of full checking and diagnostic tests for detection and localization of an arbitrary combination of failures in combination systems. A definition is given of the reference formula produced by the properly operating system, the boundary formulas, describing the operation of the system in the case of a defect, and the reference-boundary formulas. All systems are reflected in the general case by two classes of reference formulas -- redundant and nonredundant. The method of synthesis of tests is reduced to determination of the set of nonzero conjunctions of the reference-boundary formulas. Theorems are proven on the completeness of the tests produced. Algorithms and examples of the construction and minimization of tests are presented.

Author's view

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USSR

UDC: 577.4

KAZNACHEYEV, V. I., MURAV'YEV, N. P.

"Construction of a Generalized Logic Model of Automata With Memory"

Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb. (Computer Technology in Machine Building. Scientific and Technical Collection), 1970, Dec., pp 23-30 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V433)

[No abstract]

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USSR

UDC 8.74

KAZNACHEYEV, V. I., and MURAV'YEV, N. P.

"Modeling of Microelectronic Devices"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Engineering. Collection of Scientific and Technical Works on Microelectronics), 1971, vyp 5(31), pp 101-106 (from RZh-Matematika, No 5, May 72, Abstract No 5V492 from authors' abstract)

Translation: The authors suggest an analytic method of constructing a generalized logical model of microelectronic devices with a memory. The model follows the law for the operation of devices in a serviceable and unserviceable condition and is intended for use in the form of machine programs in systems of automatic design, monitoring, and trouble diagnosis. The model of a serviceable microelectronic device is constructed in the form of an ALGOL program and is realized on the BESM-4.

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USSR

UDC 577.4

KAZNACHEYEV, V. I.

"Using Inverse Transformations of the Functions of the Algebra of Logic When Constructing Tests of Combination Circuits"

V sb. Tekhn. diagnostika (Technical Diagnostics -- collection of works), Moscow, Nauka Press, 1972, pp 180-190 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V428)

No abstract

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USSR

UDC: 8.74

KAZNACHEYEV, V. I., MURAV'YEV, N. P., MURAV'YEVA, N. V.

"Analytical Methods of Finding Complete Verifying and Diagnostic Tests"

Tr. NII grazhd. aviatsii (Works of the Scientific Research Institute of Civil Aviation), 1973, vyp. 83, pp 42-55 (from RZh-Matematika, No 10, Oct 73, abstract No 10V803 by the authors)

Translation: A method is proposed for constructing complete verifying and diagnostic tests for detecting and localizing an arbitrary combination of malfunctions in compound circuits. The paper defines the reference formula which is realized by the correction circuit, the boundary formulas which describe the operation of the circuit in the case of a malfunction, and reference-boundary formulas. All circuits are represented in the general case by two classes of reference formulas -- redundant and nonredundant. The method of synthesizing tests reduces to finding the set of non-zero conjunctions of reference-boundary formulas. Theorems on the completeness of the resultant tests are proved. Algorithms and examples of construction and minimization of tests are given.

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USSR

UDC: 8.74

KAZNACHEYEV, V. I., MURAV'YEV, N. P.

"Modeling of Microelectronic Devices"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, vyp. 5(31), pp 101-106 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V492)

Translation: An analytical method is proposed for constructing a generalized logical model of microelectronic devices with memory. The model reproduces the law of operation of devices in the properly working state and in the malfunctioning state, and is designed for use in the form of computer programs in automatic planning systems which checks and diagnoses malfunctions. A model of a properly operating microelectronic device is compiled in the form of an ALGOL program and realized on the BESM-4. Authors' abstract.

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USSR

UDC 576.858:616-002.77

BOCHAROV, Ye. F., YAVOROVSKAYA, V. Ye., SHKURUPIY, V. A., BLINOVA, L. I.,  
and KAZNACHEYEV, V. P., Novosibirsk Medical Institute, and Central Order of  
Lenin Institute of Advanced Training of Physicians, Moscow

"Morphogenesis of Cocksackie A 13 Virus Isolated From Rheumatic Fever Patients"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya  
Biologicheskikh Nauk, No 10 (190), 1971, pp 131-137

Abstract: Light and electron microscope examination of human embryonic fibro-  
blasts infected with Cocksackie A 13 virus, strain 689, isolated from rheumatic  
fever patients, showed that the nature and dynamics of the observed changes  
were identical to those in fibroblasts infected with the prototype virus.  
Signs of degeneration were evident within 6 to 8 hours when the virus began  
to reproduce and emerge from the cells. Two hours later eosinophilic and  
basophilic inclusions appeared in most of the affected cells. As the infec-  
tion developed, the nucleus shifted to one of the poles. Structural changes  
in the cell organelles, especially the mitochondria, were prominent. Complex  
membranous-vesicular structures consisting of cytoplasmic vacuoles formed  
around the cells. Discrete granules were scattered about the cytoplasm.  
Virus particles concentrated on the periphery of the cells. These findings  
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USSR

BOCHAROV, Ye. F., et al., Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Biologicheskikh Nauk, No 10 (190), 1971, pp 131-137

are in agreement with the results of morphological studies on other picorna viruses and support the view that virus isolated from rheumatic fever patients belongs to the enterovirus group.

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Acc. Nr.: **AP0031624**

Ref. Code: UR 0219

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i  
Meditsiny, 1970, Vol 69, Nr 1, pp 68-71

QUANTITATIVE STUDY OF THE EFFECT PRODUCED BY THE BLOOD PLASMA  
LYMPHOCYTES OF PATIENTS WITH RHEUMATOID ARTHRITIS ON EMBRYONAL  
HUMAN FIBROBLASTS IN VITRO

Sukernik, R.I.; Skorova, S.V.; Kaznacheyev, V.P.  
Novosibirsk Medical Institute

In in vitro culture blood lymphocytes of patients with rheumatoid arthritis exert cytopathic action on the fibroblasts of human embryos. The patients' blood serum was incapable to destroy the fibroblasts. This corroborates and broadens initial morphological observations in analogous in vitro systems in which the presence in rheumatoid arthritis of cellular immunological reactions directed against the connective tissue were demonstrated.

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REEL/FRAME

1969:1751

USSR

UDC: 621.372.81.09

KAZNACHEYEV, Yu. I. and MINENKO, V. K.

"Power Losses in the Transmission of Electrical Signals Along Circular Steel Waveguides"

Kiev, Izvestiya VUZ--Radioelektronika, Vol 13, No 12, 1970, pp 1416-1422

Abstract: In the method proposed here for estimating power losses in circular steel waveguides, the losses are considered the sum of two individual parts represented by the losses caused by the finite conductance of the steel walls, and the hysteresis and eddy-current losses. Additional losses for hysteresis and eddy currents are computed for E and H waves per unit length of the waveguide; also the attenuation of the E and H waves are calculated. For both the E and H waves also, expressions are obtained for determining the full attenuation due to both parts of the power loss. Since there is a great deal of interest in the transmission of information along such waveguides by  $H_{11}$  and  $H_{12}$  waves, the authors obtain computation formulas for the attenuation of these waves. On the basis of the curves plotted for the attenuation as a function of the wavelength, it is noted that signals can be transmitted with low loss only if the tubular waveguide is made with high geometrical accuracy.

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USSR

UDC: 621.372.826

KAZNACHEYEV, Yu. I. and SERGOVANTSEV, V. T.

"Investigation of Gas Pipes as Waveguides for Transmission of Communication and Remote Control Signals"

V sb. Dal'niy transport gaza (Remote Gas Transportation--collection of works) Moscow, "Nedra," 1970, pp 261-265 (from RZh-Radiotekhnika No. 3, March 71, Abstract No. 3B129)

Translation: An analysis is made of the propagation conditions for electromagnetic waves along gas conducting pipes in order to use the latter in waveguide communication. A preliminary estimate is made of the cost for such a line. Two illustrations, two tables. N. S.

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USSR

UDC 576.3:576.353:576.353.355

KAZNADZAY, V. V., Institute of Developmental Biology, Academy of Sciences USSR

"Relationship Between the Duration of the Individual Mitotic Phases in *Crepis capillaris* Seedlings and Dose of X-irradiation"

Kiev, Tsitologiya 1 Genetika, No 5, 1971, pp 416-420

Abstract: Irradiation of *Crepis capillaris* seedlings increased the length of the G<sub>2</sub> and S phases. The duration of the G<sub>2</sub> phase was proportional to the radiation dose and it increased relative to each dose by about  $\frac{1}{2}$  hour. The delaying effect of the radiation at this time was additive. This type of increase in time probably reflected the formation of a block that prevented the cells from going into mitosis and resulted in partial synchronization of the cell population at the end of this period. The duration of the S phase with evenly increasing radiation doses lengthened unevenly. Whereas irradiation at 100 r sharply lengthened the S phase from 3.6 hours in the control to  $5\frac{1}{2}$  hours, the subsequent doses lengthened this period by only 2.4 to 2.9 hours. The dose-duration relationship in the S phase was exponential. The delay of the S phase reflected the radiation-induced desynchronization of the cells in the period of synthesis.

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Acc. Nr.: AT0046526

Ref. Code: ZIR 0144

USSR

UDC 621.314.58

KAZNEV, KIM KURBANOVICH, Postgraduate of Leningrad Electrotechnical Institute

"Analysis of Operation of a Series Capacitor Breaker Switch in an Autonomous Inverter Feed Circuit"

Novocherkassk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika (News of the Institutions of Higher Learning, Electromechanics), No 1, 1970, pp 66-72 (from Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, No 1, 1970, p 114)

Translation: Calculational relations are derived for the currents and voltage in the circuitry of a series capacitor breaker switch required to select the latter in an autonomous inverter feed circuit. There is 1 table, 2 illustrations and a 4-entry bibliography.

Reel/Frame  
19781783



1/2 035 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--STUDY OF DYNAMICS OF BUBBLE BOILING OF WATER ON FINE WIRES UNDER  
CONDITIONS OF FREE CONVECTION -U-  
AUTHOR--(05)-SUBBOTIN, V.I., KAZONVSKIY, S.P., KOROTAYEV, S.K., SVIRIDENKO,  
V.YE., SELIVANOV, YU.F. *K*  
COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. (USSR) 28, 9-13 JAN 1970

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--BOILING, FLUID DYNAMICS, GAS DYNAMICS, CONVECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1979/1596

STEP NO--UR/0089/70/028/000/0007/0013

CIRC ACCESSION NO--AP0047918

UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0047918

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CINEMATOGRAPHIC STUDY OF THE PROCESS OF BUBBLE BOILING ON FINE WIRES UNDER THE CONDITIONS OF FREE CONVECTION WAS CARRIED OUT. DIRECTIONS OF ESCAPING OF BUBBLES FROM THE SURFACE OF A HEATER WERE DETERMINED. ON THE BASIS OF SOLVING THE EQUATION OF MOTION OF A BUBBLE AND BY A MEASUREMENT OF THE DISTANCE PASSED BY IT IN THE DIRECTION OPPOSITE TO THAT OF THE ACTION OF THE LIFTING FORCE, FROM THE MOMENT OF ESCAPING TILL FULL STOP, THE VALUE OF KINETIC ENERGY NECESSARY FOR OVERCOMING THE GRAVITATIONAL FORCES IS DETERMINED. THE CONCLUSION IS MADE ABOUT A NONGRAVITATIONAL NATURE OF FORCES, CAUSING ESCAPING OF A VAPOR BUBBLE FROM THE SURFACE OF A HEATER. SOME HYPOTHESES CONCERNING THE NATURE OF THESE FORCES HAVE BEEN PROPOSED.

UNCLASSIFIED

USSR

UDC: 624.391.883.2

SHELKUNOV, K. N., KAZOVSKIY, L. G.

"Concerning the Invariance of Potential Interference Immunity With Respect to Type of Modulation for Optical Communications Channels"

V sb. Materialy Nauch.-tekhn. konf. Leningr. elektrotekhn. in-t svyazi, Vyp. 1 (Materials of the Scientific and Technical Conference of Leningrad Electrical Engineering Institute of Communications--collection of works, No 1), Leningrad, 1971, pp 95-99 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A31)

Translation: Potential interference immunity for quantum noise with various types of optical signal modulation is considered. It is shown that in a binary channel, variation in the shape of the optical pulse emission envelope and the use of signals of equal energies with modulation of the non-energy parameters (polarization, frequency, phase) do not increase interference immunity over the simplest AM case (telegraphy with a passive pause). Resumé.

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USSR

UDC 621.396.626

SKOHELKUNOV, K.N., KAZOVSKIY, I.G. (Members Of The Scientific-Technical Society Of Radio Engineering, Electronics, And Communication in honor A.S. Popov)

"Noise Immunity Of Optical Communication Lines With Frequency Multiplexing Of Channels Of Discrete Information"

Radiotekhnika, Vol 27, No 3, Mar 1972, pp 1-4

Abstract: The noise immunity is analyzed of an optical communication line with subcarrier oscillations and it is compared with the noise immunity during time multiplexing of pulses of optical radiation. The authors conclude that it is possible with a precision adequate for engineering calculations to approximate the distribution law of the magnitudes derived as a result of optimum post-detector processing of a signal in an optical communication line, with the normal law. In comparison with time multiplexing, multiplexing of channels in an optical communication line with subcarrier oscillations gives a significant energy loss. In the case where only the quantum noise of the signal for a 3-channel system is considered, this loss is evaluated at the following magnitudes: approximately 20 db with AM subcarriers and approximately 15 db with FM subcarriers. 2 fig. 4 ref. Received, 16 Dec 70.

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USSR

UDC: 535.8:666.189.1

KAZOVSKIY, I. G.

"Frequency Characteristic Optimization of a Wide-Band, Electro-Optical, Traveling Wave Modulator"

Moscow, Radiotekhnika i Elektronika, Vol. 15, No 8, 1970, pp 1669-1671

Abstract: The author presents a wide-band, electro-optical, traveling wave modulator with an optimum frequency characteristic at preset required power and aperture. The operating frequency range of this type of modulator is approximately two times higher than was considered possible. The range of modulation widens due to an increase of distortion in the low-frequency region. The sequential approximation method is used for designing the modulator with respect to a given magnitude of permissible distortion. In evaluating the obtained effect, in the first approximation the modulator was calculated for ADP crystals with a 10 GHz range at a required power consumption of 6w and 1mm<sup>2</sup> aperture. This method can be used for designing modulators with operating ranges in the super-high frequency region. Original article: two figures, five formulas, and three bibliographic entries.

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USSR

UDC 621.373:530.145.6

K  
KAZOVSKIY, L. G.

"Optoelectric Effect as Applied to Measuring the Intensity and Controlling the Modulation of a Powerful Laser Radiation"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp. 2 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute. Vyp. 2), Leningrad, 1970, pp 103-106 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8 D177)

Translation: This paper contains a theoretical foundation for the optical-electric effect based on phenomenological description of nonlinear media, and the possibility of its application for measuring the intensity of laser radiation and controlling laser modulation is investigated. The sensitivity of the device using the optical-electric effect in  $\text{Cs}_2\text{C}_4\text{H}_4\text{O}_6$  crystals is studied.

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USSR

UDC: [621.3.013+537.312.62].001.1

KAZOVSKIY, Ye. Ye., ANTONOV, Yu. F., Leningrad

"Theory of a Superconducting Magnetic Flux Pump With a Plate"

Moscow, Izv. AN SSSR: Energetika i Transport, No 4, Jul/Aug 72, pp 66-76

Abstract: The authors investigate the electromagnetic processes in a magnetic flux pump with plate which are caused by variations in the coefficients of induction of the superconducting sections of the plate and of the system as a whole as displacement of the normal zone in the plate takes place, assuming that the magnetic flux penetrating the normal zone is constant. The physical essence of the process of current increase in the load is explained. Formulas are derived for the increments of magnetic fluxes, currents and stored electromagnetic energy in the system for "pump" and "exhaust" cycles, and the limiting current of the load is determined as a function of the magnetic flux of the electromagnet. The proposed theory can be adapted to cylinder and disc modifications of the magnetic flux pump.

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USSR

UDC: 621.313:537.312.62.001.5

YAKOVLEV, Ya. Ya., Professor, Doctor of Technical Sciences, and  
ANTONOV, Yu. P., Engineer

"Operating Characteristics of Superconducting Electrical Machines"

Moscow, Elektrotehnika, No. 2, February 1971, pp 3-6

Abstract: Using some fairly simple mathematical concepts, this article discusses d-c electrical machines using the superconduction principle, which apply the effect of the movement of quantized magnetic lines of flux in superconductors of the second kind and thin-film superconductors of the first kind. Two types of machine are considered, the first using the effect of longitudinal movement of the lines of flux, the case of mutually perpendicular superconductive and magnetic bands, and the second using the effect of transverse movement of the quantized flux lines, the case of parallel bands. The discussion is limited to a general analysis of motors and generators, and the characteristic curves

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USSR

KAZOVSKIY, YE. YA., et al, Elektrotehnika, No 2, Feb 71, pp 3-6

of each are plotted. The authors state that the sketchy experimental work now available substantiates the relationships derived in this article, and suggest that further development of superconductive machine theory, with computations of the electromagnetic field distribution depending on the machine geometry, is needed.

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USSR

UDC 541.66

KAZRAGIS, A. P.

"Study of Dependence of Melting Point of Refractory and Rare Metals on Certain Atomic, Crystallochemical, Thermodynamic, and Mechanical Parameters"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 50-59

Translation: The dependence of the absolute melting point of Td- and 4f-transition metals on nuclear charge  $z$  was studied. The relationship between  $z$  and  $T$  of metals is explained by a number of factors defining each other, related by the plan:  $z$  -- electron structure -- ion charge for metallic state -- concentration of free electrons -- crystalline structure --  $T$ . It is demonstrated that the curve of the dependence of  $T$  on  $z$  connects two curves -- one for elements with odd, the other for elements with even  $z$ , and that many peaks in  $T$ - $z$  graph can be described by equations. It is demonstrated that sectors of the curves on the  $T$ - $x$  graphs ( $x$  being the classical and orbital radii of atoms and ions, the internuclear distance, the lattice parameter, electronegativity) can be approximated by straight lines which, particularly in the case of the 4f-transition metals, can be expressed with linear equations. The dependence between  $T$  for these metals

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KAZRAGIS, A. P., Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 50-59

and their heats of melting and certain mechanical properties are found. T and certain other properties of promethium and a number of other metals are critically evaluated. 10 Figures; 74 Bibliographic References.

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USSR

KAZUSHCHIK, V. A.; LADES, V. I.; PONOMARENKO, V. K. (Institute of Mathematics, Belorussian Academy of Sciences)

"Combinative Schemes for Comparing Values of a Linear Function with a Number Different from Zero"

Minsk, Vestsi Akademii Navuk BSSR: Seryya Fizika-Matematichnykh Navuk; March-April, 1972; pp 66-72

ABSTRACT: The authors present an algorithm for the synthesis of combinative schemes for comparing the values of linear functions with a number  $L$  which is different from zero, for the case in which an interrogating signal is propagated from the low-order digit to the high-order digit of the expression. Conditions are found for the regularity of the structure for the class of comparison schemes considered. It is shown that if the arguments of a linear function are binary numbers with a fairly large quantity of digits and if it is possible to isolate sequences in the number  $L$  consisting only of zeros or only of ones, then the comparison schemes considered have portions with a regular structure.

The method of synthesis suggested is illustrated with examples. The article contains three tables and two figures. There are 3 bibliographic references.

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USSR

UDC: 681.3

GUSHCHENSKOV, V. N., ZHAVRID, L. M., KAZUSHCHIK, V. A., KOSAREV, Yu. G.,  
SAVIK, N. P.

"Updating the Command System of the 'Minsk-222' Computer System"

V sb. Vychisl. sistemy (Computer Systems—collection of works), vyp.  
42, Novosibirsk, 1970, pp 74-80 (from Rzh-Kibernetika, No 9, Sep 71,  
Abstract No 5V548)

[No abstract]

USSR

UDC 612.351:[612.262:612.398.145.1]014.43:612.59

KAZUYEVA, T. V., Department of General Pathology, Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad

"The Effect of Physical Overheating of an Animal on Oxidative Phosphorylation in the Mitochondria of the Liver and Skeletal Muscles at High Temperature of the Incubation Medium and in the Presence of 2,4-Dinitrophenol"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol. 15, No 4, Jul/Aug 71, pp 16-19

Abstract: After intact rabbits were exposed to an ambient temperature of 41-43°C for 2 hours, during which period their body temperature was elevated by 2-2.5°C, in vitro oxidative phosphorylation in liver and muscle mitochondria incubated at 30°C did not differ from the control level. During incubation at 42°C, oxidation and phosphorylation in the mitochondria of experimental and control rabbits were significantly higher than during incubation at 30°C. No significant differences were observed between the reaction of the mitochondria from control rabbits and that of overheated rabbits to high temperature and DNP in vitro. The response of mitochondria to high in-vitro temperature indicates that the enzymatic systems of

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USSR

KAZUYEVA, T. V., Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya,  
Vol 15, No 4, Jul/Aug 71, pp 16-19

oxidative phosphorylation are not readily destroyed by elevated temperature,  
and it also suggests that the rate of oxidative phosphorylation may be in-  
creased in vivo when an intact animal is overheated.

2/2

KAZYMОВ, A.G.

KAZYMОВ, A.G. *Measurement/analysis*

SP65-5449-2  
7 Sept. 1973

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AZERBAIDZHAN SSR POND FISH FARMING REPORTED

Article by A. KazyMOV, director, Laboratory of Hydrobiology, Institute of Zoology, Azerbaijan SSR Academy of Sciences, Doctor of Biological Sciences, Professor, "Ponds, Fish, Fowl", Baku, *Bakinskiy Rabochiy*, Russian, 12 June 1973, p. 37

The fish yield can be increased by 12 times in 7 years. Pond fish culture is a highly promising sector of kolhoz-sovkhoz production. Organization of the first pond fish farms is being done. The Ministry of Agriculture and the Ministry of Sovkhozes are not complying with their decisions.

One of the tasks of the Ninth Five-Year Plan is to make our dinner table richer and more diverse. The Directives of the 24th CPSU Congress contain the following statement: "Improve the dietary structure of the population by increasing production and consumption of meat, fish and dairy products, eggs, vegetables, and fruit, and increase the assortment of these and other foodstuffs. The output of dietary fish products must grow by 1.5 times by the end of 1975. Great significance is imparted to the propagation and harvesting of fish at pond fish farms."

A few months after the party congress the USSR Council of Ministers adopted a decree on measures to improve fish farming and industrial fishing within the inland water basins of the country. The government posed the task of increasing the catches of food fish from rivers, lakes, reservoirs, and ponds to 1,178 tons by 1975. Of this amount 170,000 tons must be produced by ponds and 60,000 tons must be produced by the kolhoz fish farms. This is 230,000 tons total, or three times more than in 1970. Plans have been made to build lake and pond fish farms with a total area of 400,000 hectares.



USSR

UDC 547.7:546.185

KAZYMOV, A. V., SUMSKAYA, E. B., KIRILLOVA, K. M., and SHCHLINA, Ye. P.,  
Kazan' Institute of the Chemico-Photographic Industry

"Reaction of Cyanomethylenephosphonium Salts With Alkoxyvinyl(butadienyl)  
Derivatives of Heterocyclic Bases"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,434-2,438

Abstract: Established methods of obtaining trimethinephosphacyanin dyes by chemical synthesis are unsatisfactory, either because of low yield or the presence of undesirable concomitants. The authors investigated the alkoxyvinyl and butadienyl salts of heterocyclic bases as possible sources of these dyes, offering at the same time greater convenience and simplicity in synthesis. Nine phosphorus-containing trimethine and pentamethinecyanin dyes were obtained through condensation of cyanomethylenephosphonium salts with  $\beta$ -alkoxyvinyl and  $\delta$ -alkoxybutadienyl salts of heterocyclic bases. Optical properties of these, along with some physical data, were obtained. Yields and techniques of synthesis were found to be definitely advantageous in comparison with current methods of producing these dyes.

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USSR

UDC 547.558.1

KAZYMOV, A. V., and SUMSKAYA, E. B., Kazan' Scientific Research and Development Institute of the Chemical Photographic Industry

"Reaction of Triphenylcyanomethylenephosphonium Chloride With Tetraalkyl Acetates of Unsubstituted and Mesoalkylsubstituted Malonedialdehydes"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 4, Apr 71, pp 931-932

Abstract: Triphenylcyanomethylenephosphonium chloride when heated in pyridine, reacts with 1,1,3,3-tetraethoxypropane. The reaction lasts 5 hrs at 125-130°, yielding 2,6-bis-cyano-1,1,1,7,7,7-hexaphenylpentamethylenephosphonium perchlorate, m.p. 232.5-233°. The 4-methyl and 4-ethyl derivatives, melting at 229-230°C and 242-244°C respectively, were similarly prepared.

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USSR

UDC 547+546.18

~~KAZIMOV, A. V.~~, and SUMSKAYA, E. B., Kazan' Scientific Technological and Design Research Institute of Chemical Photography Industry

"Reaction of Zinke Aldehyde with Triphenylcyanomethylenephosphonium Chloride"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 6, No 9, Sep 70, pp 1944-1945

Abstract: It was determined that reaction of triphenylcyanomethylenephosphonium chloride with Zinke aldehyde yields hexamethenehemiphosphinine when it is carried out in acetic anhydride. When the reaction is carried out in pyridine and acetic anhydride, the product is a symmetric heptamethenephosphinine.

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USSR

UDC 612.216.2+612.22+612.275

KERAILO, V. I., and PONOMAREV, V. P., Institute of Physical Culture imeni P. F. Lesgaft, Leningrad

"Lung Ventilation and Gas Exchange in Man Breathing Different Gaseous Mixtures While Swimming Under Water"

Leningrad, Fiziologicheskii Zhurnal SSSR, No 12, 1971, pp 1,802-1,807

Abstract: Gas Exchange was studied in 8 experienced aqualungists who swam 500 m at top speed about 2 m below the water surface, breathing either compressed air, an argon-oxygen mixture, or 2 helium-oxygen mixture. The values of the minute volume, oxygen consumption, and carbon dioxide release were highest when the helium-oxygen mixture was used. At the time of greatest exertion, the pressure of the gas flow at inspiration and expiration was highest when the argon-oxygen mixture was used; oxygen consumption and carbon dioxide release were slightly below the maximum level while the minute volume was the lowest. The denser the gaseous mixture, the greater the resistance to respiration. Hence, the subjects swam fastest when breathing helium and oxygen.

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